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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/593,876

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Philippe Robert

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OLIFF & BERRIDGE, PLC

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EXAMINER

THOMAS, BRADLEY H

ART UNIT

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2835

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/593,876	<b>Applicant(s)</b> ROBERT, PHILIPPE	
	<b>Examiner</b> BRADLEY H. THOMAS	<b>Art Unit</b> 2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. Acknowledgement is made of the amendment filed 7/11/08.

### ***Claim Objections***

2. Claims 1 and 4 are objected to because of the following informalities: In claim 1, line 11, "each flexure arms" should be changed to "each of the flexure arms" or something similar for proper plurality agreement. In claim 4, line 3, "the" should be inserted before "two adjacent flexure arms" for proper antecedent basis. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-6 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Albrecht et al. (US 6,239,685) in view of Charvet et al. (US 6,703,916).

Regarding independent claim 1, Albrecht et al. teaches a microswitch (500) comprising:

- a deformable membrane (501) comprising at least two flexure arms (502, 504) and at least one contact arm (503) arranged between the two flexure arms (502,

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504), the arms (502-504) being substantially parallel to each other in a first stable position (e.g. Fig. 5B), the membrane (501) being physically attached (via 505) to a substrate (S) by means of the flexure arms (502, 504) by at least one of the ends of each flexure arm (see Fig. 5B),

- the flexure arms (502, 504) comprising actuating means (layers of Ni and Cr) designed to deform the flexure arms (502, 504), from the first stable position of the microswitch (see Fig. 5B) to a second stable position (not shown) in such a way as to establish in the second stable position an electric contact between at least a first conducting pad (506) formed on the substrate (S) and at least a second conducting pad (506) formed on a bottom surface of the membrane (501), in a second stable position (not shown, see col. 9, line 22 to col. 10, line 24)
- the contact arm (503) being attached to each flexure arms (502, 504) in high deformation areas of said flexure arms (502, 504) (see Fig. 5B and cols. 9-10), the contact arm (503) remaining substantially parallel to the substrate (S) and deforming less than the flexure arms (502, 504) upon actuation of the microswitch (see col. 9, line 22 to col. 10, line 24)

except for explicitly teaching:

- complementary electrostatic holding means respectively fixedly secured to the membrane and to the substrate and designed to hold the microswitch in the second stable position of the membrane.

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Charvet et al. teaches that it is known to have a complimentary pair of electrostatic holding means (16/17 and 18/19) on a membrane (11) and substrate (1) of a microswitch (see Fig. 2). It would have been obvious to one having ordinary skill in the microswitch art at the time the invention was made to have used complimentary holding means as taught by Charvet et al. in the device of Albrecht et al., since Charvet et al. states at col. 4, lines 5-26 that such a modification would have allowed for increased control of the deformable element , thus allowing for increased control of the overall switch.

Regarding Claim 2, Albrecht et al. discloses:

- the contact arm (503) is elongate (see Fig. 5B).

except for:

- the contact arm supporting the electrostatic holding means.

Charvet et al. teaches that it is known to have a complimentary pair of electrostatic holding means (16/17 and 18/19) on a membrane (11) and substrate (1) of a microswitch (see Fig. 2). It would have been obvious to one having ordinary skill in the microswitch art at the time the invention was made to have used complimentary holding means as taught by Charvet et al. in the device of Albrecht et al., since Charvet et al. states at col. 4, lines 5-26 that such a modification would have allowed for increased control of the beam, thus allowing for increased control of the overall switch.

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Regarding Claim 3, Albrecht et al. discloses:

- the contact arm (503) being attached, via the central part (near character 501) thereof, to the flexure arms (502, 504) at the level of their respective central parts (see Fig. 5B).

except for:

- two ends of the flexure arms are fixedly secured to the substrate.

Charvet et al. teaches that it is known to have ends of an arm element of a membrane (11) be secured to a substrate (1) and contact arms (2, 3) attached centrally to the arm (11) (see Fig. 1). It would have been obvious to one having ordinary skill in the switch art at the time the invention was made to have attached the arms together and to the substrate as taught by Charvet et al., since Charvet et al. states at that such a modification would have improved the ability of the arms to bend and thus ensure electrical continuity (see col. 3, line 3, line 40 to col. 4, line 4).

Regarding Claim 4, Albrecht et al. alone teaches:

- each flexure arm (502, 504) comprises a first (corner) end (see Fig. 5B) fixedly secured (via 505) to the substrate (S) and a second end (see split in Fig. 5B near character 501) fixedly secured to the contact arm (503), the second ends of two adjacent flexure arms (502, 504) being respectively fixedly secured to opposite (left and right side) ends (centered at the split near character 501) of the corresponding contact arm (503) (see Fig. 5B).

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Regarding Claims 5-6, Albrecht et al. discloses the claimed invention except for explicitly teaching:

- the actuating means of the microswitch comprise a thermal actuator.
- the thermal actuator comprises a heating resistor inserted in at least one end of the flexure arms.

Charvet et al. teaches that it is known to have a microswitch with a thermal actuator in the form of heating resistors (14, 15) (see 0008] and Fig. 1a). It would have been obvious to one having ordinary skill in the microswitch art at the time the invention was made to have used heating resistors as taught by Charvet et al. in the device of Albrecht et al., since Charvet et al. states at col. 3, line 48 to col. 4, line 4 that such a modification would have caused the beam to bend, thus ensuring electrical continuity. The implementation of thermal actuators in the form of heating resistors would have thus enabled more effective operation of the switch and more certain continuity of the switch upon actuation.

Regarding Claim 8, Albrecht et al. discloses the claimed invention except for explicitly teaching:

- the flexure arms are bimetal strips.

Charvet et al. teaches that it is known to have a membrane (11) that undergoes a bimetallic effect (see Fig. 4 and col. 3, line 65 to col. 4, line 4). It would have been obvious to one having ordinary skill in the microswitch art at the time the invention was made to have used bimetallic elements for arms as taught by Charvet et al. in the

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device of Albrecht et al., since bimetallic elements are well known in the switch art. In the case of Charvet et al., the bimetallic elements aid in the bending of the beams into the cavity, which would have ensured desired and reliable operation of the switch.

Regarding Claim 9, Albrecht et al. discloses the claimed invention except for:

- the electrostatic holding means of the membrane comprise at least one electrode.

Charvet et al. teaches that it is known to have a complimentary pair of electrostatic holding means (16/17 and 18/19) on a membrane (11) and on a substrate (1) of a microswitch (see Fig. 2 and [0037]). It would have been obvious to one having ordinary skill in the microswitch art at the time the invention was made to have used complimentary holding means as taught by Charvet et al. in the device of Albrecht et al., since Charvet et al. states at col. 3, line 54 to col. 4, line 25 that such a modification allows for increased control of the beam, thus allowing for increased control of the overall switch.

5. Claim 7 is are rejected under 35 U.S.C. 103(a) as being unpatentable over Albrecht et al. (US 6,239,685) taken with Charvet et al. (US 6,703,916) as applied to claim 1 above, and further in view of Nelson (US 2004/0061579).

Regarding Claim 7, Albrecht et al. taken with Charvet et al. discloses the claimed invention except for explicitly teaching:



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- the actuating means of the microswitch comprise a piezoelectric actuator.

However, Nelson states at [0042] that the beams (14 and 20) may bend due to piezoelectric deformations. Thus, it would have been obvious to one having ordinary skill in the art to use piezoelectric means as the actuating means in the invention of Albrecht et al. taken with Charvet et al. to provide the bending of the arms, since deformations by various material properties (i.e. resistance, piezoelectric) are known equivalents in the art.

### ***Response to Arguments***

6. Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection. Applicant is suggested to more specifically claim the structural positions/attachment of the arms with respect to one another and with respect to the various deformation areas.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references teach switches with deformable members: Schlaak et al. (US 5,635,750), Carr (US 6,091,050), DeReus (US 6,876,482), Prophet (US 6,927,966), Chou (US 7,230,513) and Xu et al. (US 7,372,348).

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRADLEY H. THOMAS whose telephone number is (571)272-9089. The examiner can normally be reached on 7:00am - 3:30pm (Eastern).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jayprakash N. Gandhi can be reached on 571-272-3740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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BHT

/Jayprakash N Gandhi/  
Supervisory Patent Examiner, Art Unit 2835